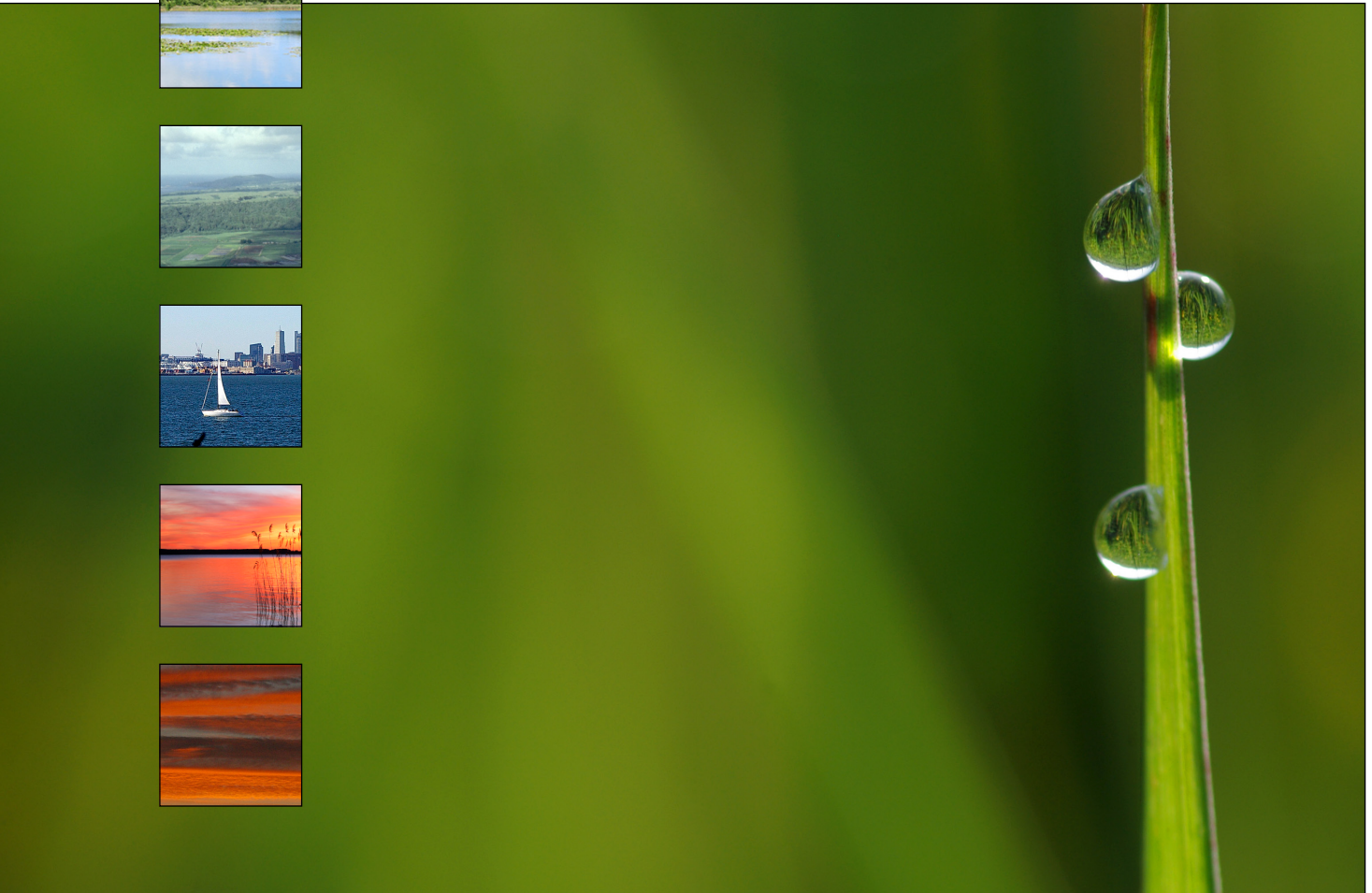
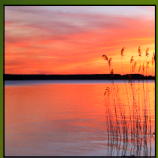


Accomplishment Highlights | 2011



Massachusetts Department of Environmental Protection

Introduction

The Massachusetts Department of Environmental Protection (MassDEP) is the state agency responsible for ensuring clean air and water, the safe management of toxics and hazards, the recycling of solid and hazardous wastes, the timely cleanup of hazardous waste sites and spills, and the preservation of wetlands and coastal resources. The agency achieves its mission through a variety of activities, including developing environmental regulations, implementing environmental permitting, providing technical and financial assistance, conducting compliance assurance activities, and issuing enforcement actions against violators. MassDEP implements a number of the Commonwealth's environmental protection statutes as well as certain federal programs for which the state has taken delegation.

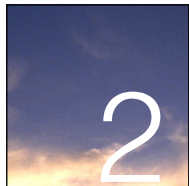
The year 2011 has been a challenging, but very exciting and productive year as the agency has continued to protect the people and the environment of the Commonwealth. Through the hard work of MassDEP's dedicated staff, combined with support from the agency's important partners in many external sectors, the department has achieved numerous important accomplishments. In 2011, the agency continued a vast array of vital work to protect the environment and public health; initiated major changes to make MassDEP better and smarter; and halted a serious, multi-year downward budget and resource trend. This document provides some accomplishment highlights from the year 2011.

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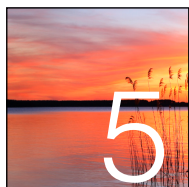
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Innovation and Reform

In recent years, MassDEP has experienced significant budget cuts resulting from the national economic downturn. In 2002, MassDEP's annual funding was \$62.9 million with a staff of 1,200. In 2011, MassDEP's budget was down to \$46.4 million and 840 employees – the lowest levels since the mid-1980s. Yet MassDEP's responsibilities have increased rather than contracted during this time period, with the regulation of greenhouse gases under the Massachusetts Global Warming Solutions Act, the transfer to MassDEP of responsibility for oversight of thousands of commercial underground storage tanks, the transfer from the Massachusetts Department of Conservation & Recreation (DCR) of the Well Driller Program, and the implementation of the Mercury Management Act, among other new responsibilities.

To face these challenges, MassDEP undertook some key initiatives in 2011 focused on maintaining high standards of environmental protection while operating with reduced resources and increased responsibilities, including regulatory reform; information technology transformation; and creation of the new Permit Assistance & Management Office. A summary of each can be found below.

Regulatory Reform

Since April 2011, MassDEP has been working on a broad Regulatory Reform Initiative. The goal of this far-reaching effort is to maintain the agency's high standards for environmental protection with the present level of staff, which has been reduced by more than 30 percent during the last decade. This initiative also complies with the 2010 Act Relative to Economic Development

Reorganization, which requires Massachusetts state agencies to review existing regulations for efficiency improvements.

MassDEP Deputy Commissioner Alicia McDevitt last year led a major effort to solicit regulatory reform ideas from environmental advocates, business leaders, and municipal officials, in addition to MassDEP staff. This effort included the establishment of an external Regulatory Reform Working Group to serve as key advisors, as well as the solicitation of input from many of MassDEP's other standing stakeholder groups. The best of the ideas were proposed for implementation in a Draft Action Plan for Regulatory Reform at MassDEP that was released for public review and comment in October and November of 2011.

MassDEP received very useful public input on the Draft Regulatory Reform Action Plan, which was primarily positive and endorsed the reform proposals contained within it. Those public comments have led to consideration of a few important adjustments to the scope of some of the reforms. The resulting Final Action Plan for Regulatory Reform was released on March 5, 2012, and is designed to remedy duplicative or redundant permitting, encourage environmentally beneficial projects, pare down MassDEP oversight of low-impact activities, and free up staff to focus on high priority items, including water body monitoring, inspections and enforcement, and implementation of the federal Clean Air Act.

Commissioner Kenneth Kimmell is eager to see implementation of the full suite of reforms near the end of fiscal year 2012. MassDEP is proud to be the first agency in the Commonwealth to perform the retroactive review of its regulations



called for by the legislature and Governor Patrick in the recent Economic Development law.

More information on MassDEP's Regulatory Reform Initiative is available at: www.mass.gov/dep/about/priorities/regreform.htm

Information Technology (IT) Transformation

In 2011, MassDEP launched a major initiative to transform the agency's outdated information technology (IT) systems. The Department's current IT systems and capabilities are woefully outdated and "siloeed." These challenges seriously hamper MassDEP's ability to fulfill its critical mission of protecting public health and the Commonwealth's natural resources. The agency's IT systems also fail to adequately enable permitting at the speed of business, using data to assess relative risk, and sharing of important information with other agencies, businesses and the public.

The Executive Office of Energy and Environmental Affairs (EEA) and MassDEP fully understand that in order to advance efficiency, improve civic engagement, and meet current and future public expectations for government services in the digital age, MassDEP must overhaul IT systems and develop a new set of online tools. The Department and its stakeholders have for years identified the increasing need for improvements to agency IT. More recently, IT improvements have been identified as among the best ways to drastically improve agency efficiency within current reduced staffing levels. This IT overhaul will significantly boost agency performance while serving as a nation-leading example of leveraging technology to protect the environment.

The goals of the Information Technology Transformation Initiative include having paperless, on-line permitting fully in place in three years, making it easy for citizens and business to get vital environmental information online 24/7 about the environmental conditions in their neighborhoods, and greatly enhancing our

enforcement capabilities by taking advantage of new technologies, such as remote sensors. The IT transformation at MassDEP will serve as a pilot for expanding these systems and services to our sister agencies within the EEA Secretariat.

In October 2011, the Commonwealth launched this initiative by conducting a review of high-level agency "business processes," agency IT systems, how IT is currently used, and how information technology can more be effectively utilized by the agency, the public and regulated entities. As a result, in early 2012, MassDEP finalized an actionable roadmap called the "Environmental Information and Public Access Study." This IT roadmap outlines the steps needed to develop new IT systems and tools that will enable the Department to perform timely, predictable, and cost-effective permitting; implement data-driven enforcement strategies; respond effectively to environmental threats; and make MassDEP's vast environmental data sets more transparent and accessible to the public.

This major undertaking will involve phasing out more than 100 siloeed legacy data management systems and replacing them with a state-of-the-art, enterprise-wide, service-oriented architecture. Some of the new services that will be provided after implementation are:

- Improved on-line assistance and model templates to guide project proponents through permitting and other regulatory requirements;
- Ability for permit applicants and other interested parties to track the status of applications under agency review;
- Enhanced capacity for concurrent review of submittals among multiple state agencies;
- Easy, on-line tools for public review and comment on draft permits and proposed regulations, and web-based access to final agency documents like permits and enforcement actions;
- New remote sensing and real-time submittal of monitoring data to help MassDEP oversee

compliance and ensure timely response to violations;

- Utilization of hand-held mobile devices by inspectors and emergency responders to give them access to critical data and to initiate response actions while in the field, and creation of mobile applications for citizen reporting of potential violations;
- Better use of on-line, map-based environmental data to help the agency target the biggest problems and to help citizens access information about regulated activities and conditions in their neighborhoods; and
- Substantially improved agility for MassDEP to upgrade its databases and digital tools.

In 2012, the Department and EEA will be seeking the capital funding needed to implement the IT Transformation. Meanwhile, MassDEP will begin significant work within the agency to pave the way for implementation of the IT overhaul, including further aligning agency work practices across programs and regions, and establishing improved agency-wide data standards.

MassDEP's New *Permit Assistance and Management Office*

MassDEP always strives to issue review and process permit applications at “the speed of business.” In fact, MassDEP was the first agency of its kind in the nation nearly two decades ago - and remains one of the few today - to offer applicants the guarantee of a timely permit decision or get their permit application fee back. In most cases, the MassDEP Regional Office is the best and most efficient starting point for learning about the environmental permits that a new or expanded project might need. By scheduling a

pre-application meeting with regional office staff, project proponents can even sometimes learn small project changes that can eliminate the need for some MassDEP permits entirely.

There may be times, however, when project proponents want or need additional assistance in navigating the MassDEP permitting process, or expediting a decision that is business-critical. That is why, in November 2011, the agency opened its Permitting Assistance and Management Office to provide help when project proponents:

- Are proposing a large, complex, or cutting-edge facility or project that will require permitting coordination among various local, state and federal agencies, or across multiple MassDEP regions.
- Want to take advantage of Fast Track Permitting, which is a project-specific agreement for accelerating MassDEP's review of a project or facility that includes negotiated permit schedules and fees and provides a single point of contact through the entire permitting process.
- Need an impartial ombudsman to address questions or concerns you may have about MassDEP permitting procedures, timelines or outcomes.

For additional information about the services provided by this new office:

- Check Frequently Asked Questions - www.mass.gov/dep/service/online/general.htm
- Call 617-654-6650, or
- E-mail - MassDEP.PermitsAssistance@massmail.state.ma.us



2

Clean Air and Global Climate Change

Climate and Energy

Massachusetts Global Warming Solutions Act – Progress and Next Steps

The Massachusetts Global Warming Solutions Act (GWSA) mandates the most aggressive greenhouse gas (GHG) emission limits for any single state in the nation, and meeting these limits is a high priority for the Patrick Administration. In accordance with the GWSA, the Commonwealth has set a goal of reducing GHG emissions to 25% below 1990 levels for 2020, and the Act requires the state to reduce GHG emissions to 80% below 1990 levels by 2050. The Administration has also issued the “Clean Energy & Climate Plan for 2020,” which contains an array of established and new measures that reduce energy waste, save money, and stimulate the adoption of clean energy technologies, thereby creating jobs at the same time that they reduce GHG emissions.

The Patrick Administration is now implementing the actions outlined in the 2020 Climate and Energy Plan. The primary objectives during this implementation phase will be to complete the development of systems to monitor progress in implementing the 2020 plan; and create ways to communicate progress and developments to the public and key stakeholders. In addition, the state will begin consideration of how to reach the 80% below 1990 level GHG limit for 2050.

The agencies under the Executive Office of Energy and Environmental Affairs (EEA), including MassDEP, have taken concrete actions to fulfill these objectives. Energy and Environment Secretary Sullivan, along with all

of his Commissioners and the Massachusetts Department of Transportation (MassDOT), launched the creation of five subcommittees to be staffed by the appropriate state agencies that will monitor progress towards our 2020 and 2050 goals, develop a clean energy and climate plan for 2050, improve existing policies, and develop new policies and programs to ensure compliance with the GWSA. Each subcommittee will focus on the following emission sector or topic area: (a) Buildings, Energy Efficiency, and Demand Side Management; (b) Energy Generation & Distribution; (c) Transportation, Smart Growth & Land Use; (d) Non-Energy GHG Emissions; and (e) Climate Change Adaptation. These subcommittees will be charged with drafting regular progress reports for submission to the Legislature and will meet regularly and work closely with external stakeholders. In 2012, EEA plans to launch a GWSA website and dashboard that will track progress and provide user-friendly and helpful information on GWSA implementation, and facilitate public awareness and participation in the process. The Secretariat will also be creating a GWSA Implementation Advisory Committee composed of leaders in business, research, and policy. That committee is charged with providing Secretary Sullivan with critical guidance, especially regarding the regular GWSA Progress Report to the Legislature and the development of the 2050 Implementation Plan.

Eight years to cut emissions by 25 percent is a challenge. EEA is very confident that the concrete steps taken to date, combined with future actionable measures and rigorous analysis will meet the Commonwealth’s objectives. More information on the Massachusetts Global

Warming Solutions Act can be found at:
www.mass.gov/dep/air/climate/gwsa_docs.htm

Clean Energy Results Program Launched by MassDEP and DOER

After a few months of preparation, the Clean Energy Results Program (CERP) was launched in November 2011. This is a major, innovative new initiative that will advance the Patrick-Murray Administration's goals for creating sources of renewable energy and encouraging energy-efficient development. This is a joint initiative of MassDEP and the Massachusetts Department of Energy Resources (DOER). The Clean Energy Results Program will further encourage the development of clean-energy projects in Massachusetts by focusing the scientific expertise of MassDEP and DOER in an effort to streamline the technical and regulatory barriers, as well as improving the siting and permitting processes related to these projects.

In 2007, the Patrick-Murray Administration made the landmark move of combining state energy agencies (Department of Public Utilities and DOER) into the Environmental Secretariat alongside MassDEP and other environmental agencies. Since that time, Massachusetts has become the most energy-efficient state in the country, according to the American Council for an Energy-Efficient Economy (ACEEE). ACEEE's state-by-state energy efficiency scorecard ranked Massachusetts above California, taking note of the Patrick-Murray Administration's clean energy agenda, which includes innovative energy efficiency programs like this one.

In the fall of 2011, the Massachusetts Clean Energy Center (MassCEC) announced significant growth in the Massachusetts clean energy economy, which now employs more than 64,000 people, according to its 2011 Massachusetts Clean Energy Industry Report. The report identified 4,909 clean-energy companies across the state that saw a 6.7 percent increase in jobs from July 2010 to July 2011.

This initiative harnesses MassDEP's unique scientific and regulatory expertise to advance

the timely permitting of clean-energy projects. Working together, MassDEP and DOER have developed the following short- and long-term goals for the Clean Energy Results Program:

- In conjunction with public and private sector partners, ensure that at least three anaerobic digestion/Combined Heat and Power (CHP) projects are permitted, constructed, and operated by 2014, and monitor environmental performance to determine best practices.
- In 2012 – in coordination with the Massachusetts Department of Public Health – complete the review of any potential human health impacts associated with wind turbines through an external panel of expert scientists, and advance public discussion on the health effects of wind turbines based on sound science.
- By 2013, increase the use of renewable energy at participating drinking water and wastewater treatment facilities (known as "Energy Leaders") by 50 percent using the benchmark of 2007 energy generation and use.
- Achieve zero-net energy at 20 percent of drinking water and wastewater treatment facilities by 2020 through generation of on-site energy in a quantity equal to or greater than the total amount of energy consumed.
- Increase energy production from aerobic and anaerobic digestion to 50 megawatts (375 GWh/y) by 2020.
- Achieve the Commonwealth's goals of diverting 350,000 tons per year of organic material from landfills and incinerators by boosting use of anaerobic digestion, CHP, recycling, and composting.
- By 2020, achieve 50 megawatts of new solar photovoltaic on underutilized contaminated land (landfills and Brownfields), helping meet the Renewable Energy Portfolio Standard (RPS) Solar Carve-Out target of 400 megawatts of solar photovoltaic (PV), and creating green jobs and tax revenue benefitting Massachusetts communities.

For more information on the MassDEP/DOER Clean Energy Results Program, go to:
www.mass.gov/dep/cleanenergy.htm



The Regional Greenhouse Gas Initiative (RGGI)

The Regional Greenhouse Gas Initiative (RGGI) is the first mandatory, market-based effort in the United States to reduce greenhouse gas emissions. Ten Northeastern and Mid-Atlantic states, including Massachusetts, have capped and will reduce CO₂ emissions from the power sector 10 percent by 2018. RGGI has completed 11 successful GHG emission credit auctions to date. Each state directs its own strategy for investing RGGI proceeds in programs that benefit consumers and build a clean energy economy. Massachusetts, through MassDEP and DOER, has developed a plan for the distribution of RGGI auction proceeds to a range of consumer-benefit programs, with the largest distribution going to utility-administered energy-efficiency programs.

A report released in February 2011 shows that, overall, RGGI participating states are investing 80 percent of CO₂ allowance proceeds, which now total more than \$900.5 million, in the following strategic energy programs:

- **52 percent** to improve energy efficiency;
- **11 percent** to accelerate the deployment of renewable energy technologies;
- **14 percent** to provide energy bill payment assistance, including assistance to low-income ratepayers;
- **1 percent** for a wide variety of greenhouse gas reduction programs, including programs to promote the development of carbon emission abatement technologies, efforts to reduce vehicle miles traveled, and programs to increase carbon sequestration.

The report is based on each state's plan for the investment of CO₂ allowance proceeds and on evaluations of strategic energy programs. These investments are reducing CO₂ emissions and generating important consumer benefits, including lower energy bills, greater electric system reliability and more jobs. Evaluations of several energy efficiency and renewable energy

programs in the RGGI Participating States show \$3-\$4 in benefits for every \$1 invested.

Additional information on the benefits being generated in Massachusetts by the Regional Greenhouse Gas Initiative may be found at: www.rggi.org/rggi_benefits/program_investments

Clean Air

Clean Air and Economic Growth

Does aggressive environmental protection hinder economic progress? Some people think so. They believe, for example, that striving for cleaner air may cost opportunities to build a stronger economy.

But, the experience of Massachusetts over the last few decades – **against a backdrop of ever-tightening federal and state emission limits** on everything from factories and power plants to the cars we drive – seems to tell a remarkably different story:

- The Massachusetts economy, as measured by total production across the state, has **grown dramatically** since 1980.
- The state's **population and total energy use have grown modestly but steadily** during the same period.
- Bay Staters are **putting significantly more mileage on their vehicles** today than they did three decades ago. Yet emissions of four smog-causing and toxic air pollutants have **dropped by 60 percent** statewide during the same time frame.

In Massachusetts, the economic "opportunity cost" of cleaner air appears to be nothing more than a myth. The state's environment and the state's economy are both significantly greener today than they were in 1980.

For additional details, see the chart on “Economic Growth and Air Quality Indicators 1980-2008”
www.mass.gov/dep/air/priorities/economy.htm

MassCleanDiesel “Clean Air for Kids”

MassCleanDiesel “Clean Air for Kids” was the nation’s first fully-funded statewide voluntary program to reduce air pollution from school buses. The school bus retrofit program significantly reduced air pollutants emitted from thousands of older school buses serving nearly 310,000 students in 300 communities across the Commonwealth over the past three years. With \$16.5 million in state and federal funding provided by the Massachusetts Department of Transportation (MassDOT), the MassCleanDiesel program installed pollution controls – known as diesel retrofits – on 2,114 diesel-powered school buses.

The MassCleanDiesel program is responsible for reducing emissions of harmful air pollutants by more than 27.2 tons per year. With the retrofit of the school bus fleet, particulate matter emissions are reduced by approximately 1.5 tons per year or by approximately 8.9 tons over the next six years, which is the expected life of the pollution control devices installed. Hydrocarbon emissions are reduced by approximately 5.4 tons per year or 32.5 tons over the life of the equipment, while carbon monoxide emissions are reduced by 20.3 tons per year or 121.9 tons over the life of the equipment. There is strong scientific evidence that particulate matter is contributing to the rising asthma rates in school-age children, and is also considered a probable carcinogen. Hydrocarbons help form ground-level smog, and exposure to this pollutant is associated with increased hospital admissions for respiratory distress, such as bronchitis. Exposure to Carbon Monoxide can cause headaches, nausea, and even be fatal in some instances.

By participating in the program, these 2,114 school buses received a diesel oxidation catalyst (DOC), a crankcase ventilation (CCV) system, or both. DOCs, which function like a catalytic converter in the engine exhaust system, reduce

tailpipe emissions. CCVs, which are installed on the engine, greatly reduce the infiltration of blow-by gases from the engine into the bus’ interior. The school bus retrofits were performed by New England Transit Sales of Tyngsboro, Shuster Corporation of New Bedford, and Tri State Truck Center, Inc. of Shrewsbury.

For more information about school bus diesel retrofits, go to:

www.mass.gov/dep/air/diesel/masscleandiesel.htm

Grant Program Helps to Retrofit 170 Waste Collection Vehicles, Cutting Harmful Diesel Emissions

In 2011, nine private waste haulers and 16 municipalities installed diesel pollution control equipment on 170 garbage trucks and recycling vehicles to reduce emissions under MassDEP’s MassCleanDiesel grant program. The program is supported by funding from the federal Diesel Emissions Reduction Act (DERA) and funding from an environmental enforcement settlement with American Electric Power.

The private waste haulers that installed the retrofit equipment serve 36 communities across the Commonwealth. The municipalities that received retrofits were: Blackstone; Bourne; Brookline; Chicopee; Clinton; Framingham; Greenfield; Holyoke; Lynn; Melrose; Natick; Norwood; Quincy; Springfield; Wakefield; and Westfield. Two retrofit equipment vendors under state contract with MassDEP, Shuster Corporation of New Bedford and Southworth-Milton, Inc. of Milford, installed the retrofit devices.

Additional information may be found at:

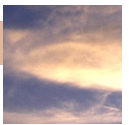
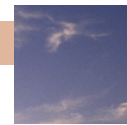
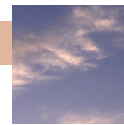
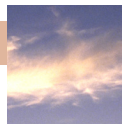
www.mass.gov/dep/air/diesel/masscleandiesel.htm

Grant Programs To Further Reduce Diesel Emissions

In 2011, MassDEP successfully gave out \$2.2 million in funding for diesel emission reductions under the federal American Recovery and Reinvestment Act (ARRA), including the following projects:

ACCOMPLISHMENT HIGHLIGHTS

Clean Air and Global Climate Change



- Massachusetts' state-owned, on-road heavy-duty diesel vehicle fleet: 261 heavy-duty vehicles, including dump trucks, plow trucks, rack trucks, and truck/crane combination vehicles, owned by MassDOT and the Department of Conservation and Recreation, were retrofitted with diesel oxidation catalysts (DOCs) by New Bedford-based Shuster Corporation. These vehicles are typically used for on-highway construction projects and/or snow plowing and other uses including movement of materials and personnel.
- MBTA Locomotive Head End Power Repower Program: MassDEP provided the Massachusetts Bay Transportation Authority (MBTA) with funding to repower 12 head-end power (HEP) generator sets in its commuter locomotive fleet. HEP generators supply electrical power used for heating, cooling, and lighting the passenger coaches. Although much smaller than main locomotive engines (670 horsepower versus 3,000 hp), HEP engines typically consume 40 percent or more of the diesel fuel used by a locomotive and emit a substantial amount of the total emissions.
- Northeast Hybrid Truck Consortium Hybrid Truck Purchasing Program: MassDEP used ARRA funding to offset the incremental cost (up to 25 percent) of purchasing four diesel medium- and/or heavy-duty hybrid trucks owned by National Grid and NSTAR as replacements for the conventional diesel-powered trucks in their fleets.
- Massport Fish Pier Electrification Project: MassDEP provided funding to Massport to enable fishing vessels berthed at the Boston Fish Pier to switch power from diesel engines to the electrical grid system. The ARRA funding was used to add three power stations to accommodate six additional vessels.



3

Clean and Safe Water

Millions in Loans for Clean Water and Drinking Water Projects

Eighty-eight municipal projects across the Commonwealth became eligible for 2-percent loans in 2011 to fund projects to improve water quality, upgrade or replace aging wastewater and water supply infrastructure, and cut energy use and costs associated with water utilities. The Commonwealth offered low-cost State Revolving Fund (SRF) financing worth nearly \$400 million to 71 communities throughout Massachusetts to fund projects implemented by cities and towns, regional water supply and wastewater treatment districts, and the Massachusetts Water Resources Authority (MWRA). The projects included 57 clean water initiatives totaling nearly \$300 million and 31 drinking water projects totaling \$100 million.

This also included financing for 23 projects worth more than \$64 million for “green infrastructure projects” or components of projects that involve energy-efficiency upgrades to treatment plants and the on-site installation of renewable energy technologies for solar and wind power. Energy use at wastewater and drinking water facilities is a major contributor to overall energy consumption for many cities and towns, with communities statewide spending approximately \$150 million per year on electricity to treat 662 billion gallons of wastewater and drinking water. Up to 30 percent of municipal energy use is devoted to water treatment.

Additionally, this 2011 funding provided nearly \$18 million in loan-principle forgiveness for 21 construction projects in 15 municipalities which are considered Environmental Justice

(EJ) communities, with below-average Median Household Income levels. EJ areas are home to lower-income people and communities of color who may experience a disproportionate share of environmental burdens and often lack environmental assets in their neighborhood.

The SRF is comprised of two programs: the Clean Water Fund, which has awarded nearly \$4.5 billion in loans since the program’s inception in 1991; and the Drinking Water Fund, which has awarded nearly \$1.1 billion in projects since it began in 1999. Massachusetts awards infrastructure financing under the SRF, which is administered by the Massachusetts Water Pollution Abatement Trust – a joint effort of MassDEP, the Executive Office of Administration and Finance, and the State Treasurer’s Office.

The Clean Water Projects funded for 2011 can be found in the following document: *2011 Final Clean Water Intended Use Plan* - www.mass.gov/dep/water/wastewater/cwiup11.pdf

The Drinking Water Projects funded for 2011 are listed in the following document: *2011 Final Drinking Water Intended Use Plan* - www.mass.gov/dep/water/wastewater/dwiup11.pdf

Grants awarded to Assess Water Quality in Watersheds

In June 2011, \$201,812 was awarded in grants to four projects across the Commonwealth to conduct watershed non-point source pollution assessment and planning work to address water quality impairments. The projects, selected by the MassDEP, are located in Adams, Carver, Milton

ACCOMPLISHMENT HIGHLIGHTS

Clean and Safe Water



and Woburn. The grants are funded through the Nonpoint Source Program established by Section 319 of the U.S. Clean Water Act.

Since 1998, MassDEP has funded 68 projects under this program for a total of approximately \$3.2 million. Non-point source (NPS) pollution is caused by diffuse sources that are not regulated and are normally associated with precipitation and stormwater runoff from the land or infiltration into the soil. Common types of NPS pollution include phosphorus and nitrogen from lawn and garden fertilizers, bacteria from pet waste and waterfowl, oil and grease from parking lots and roadways, and sediment from construction activities and soil erosion.

Qualified proposals were selected on a competitive basis and grant recipients include municipalities and regional planning commissions. The projects awarded grants in 2011 were:

- Bacteria Source Tracking & Mitigation in the Hoosic River Watershed (\$56,300): The Berkshire Regional Planning Commission will identify non-point sources of bacterial contamination in the Hoosic River Watershed and develop strategies to mitigate the sources found. This project will continue work initiated by MassDEP's Pilot Bacteria Source Tracking Program to address the primary cause of impairment in the watershed.
- Cranberry Bog Nutrient Loss Study (\$58,642): This project in Carver will collect data on nutrient losses from various types and configurations of cranberry bogs to better inform estimates of potential nitrogen discharges from cranberry bogs of various configurations. This information can be used to more accurately model the potential contribution that cranberry bogs may be making to the eutrophication of Buzzards Bay and Cape Cod estuaries. In addition to being the largest freshwater contributor to Buzzards Bay, the Weweantic basin has more cranberry

bog acreage than any other coastal watershed in Massachusetts.

- Milton Best Management Practices (BMP) Development Project (\$37,000): This project will identify suitable sites for retrofitting with structural and non-structural stormwater BMPs using a Low Impact Design (LID) approach to address pathogens and other pollutants of concern. Conceptual designs and cost estimates will be developed for BMPs at three or more sites. The project will use a methodology to identify and prioritize BMP retrofit opportunities that are currently employed on three projects in Sharon, Canton, and Dedham respectively.
- Aberjona River (Woburn, Burlington, Reading and Winchester) Watershed Best Management Practices (BMP) Development Project (\$49,860): This project will evaluate sub-watersheds to identify suitable sites for retrofitting with structural stormwater BMPs. Potential retrofit sites will be prioritized based on water quality assessment, Geographic Information System (GIS) analysis, site surveys, and a collaborative decision-making process. Conceptual designs and cost estimates will be prepared for one site in each of the four participating municipalities.

MassDEP Helps Respond to Federal Study on Arsenic and Uranium in Private Drinking Well Water

The U.S. Geological Survey (USGS) released a study in the summer of 2011 which indicated that levels of naturally-occurring arsenic and uranium exceed drinking water standards in some private drinking-water wells in central and northeastern Massachusetts. Long-term exposure to arsenic above the drinking water standards has been linked to skin, bladder, and lung cancer, while long-term exposure to uranium in drinking water can damage the kidneys. Based on information available on water testing results and the

Massachusetts Department of Public Health's companion effort testing for arsenic and uranium in urine, the probability that anyone's private drinking water well poses an acute health concern is very low.

In response to the USGS report, state officials at MassDEP and the Massachusetts DPH worked with USGS to develop resources to help private-well users use an on-line predictive tool to determine whether their water might meet federal safety standards. The agencies also provided guidance on water testing and treatment.

USGS researchers analyzed water samples from private bedrock wells in 116 area cities and towns and found that 13 percent exceeded federal drinking water standards for arsenic, and 3 percent exceeded federal standards for uranium. Both arsenic and uranium are found naturally in some types of bedrock in the study area. In its investigation, USGS estimated that about 5,700 of the estimated 90,000 wells in the study area may exceed the standard for arsenic, and about 3,300 may exceed the standard for uranium. Testing is needed to confirm any predicted concentration.

Public water supply sources regulated by MassDEP are routinely monitored for arsenic and uranium and, if necessary, they have been treated to put those sources into compliance with the standards. Because private wells are regulated at the local level, MassDEP and MDPH provided health and water treatment information to health officials in each town with a higher probability of contamination from bedrock sources.

The USGS report, "Arsenic and Uranium in Water from Private Wells Completed in Bedrock of East-Central Massachusetts – Concentrations, Correlations with Bedrock Units, and Estimated Probability Maps", is posted online at:

<http://pubs.usgs.gov/sir/2011/5013/>

To determine any risk in an area or to get advice on testing and information on the potential health effects of arsenic and uranium, visit the MassDEP at: www.mass.gov/dep/water/drinking/au/aulocate.htm

MassDEP and EPA Offer Stormwater Workshops

The Massachusetts Statewide Stormwater Seminar Series in 2011 provided 16 individually-designed hands-on municipal stormwater workshops across the Commonwealth. The workshops covered up to 20 topics, including: Low Impact Development; Illicit Discharge Detection and Elimination; Writing a Local Stormwater Ordinance; and Funding Local Stormwater Programs. These seminars offered practical steps and actions that town officials and residents can take to reduce stormwater pollution into local rivers, streams, ponds and lakes. The seminars were offered in 16 locations across the state, were free, and open to all.

These seminars were funded by the MassDEP-administered "Nonpoint Source Pollution Competitive Grant Program." Local organizations, such as the Central Massachusetts Regional Planning Commission, the Merrimack River Watershed Council, and Save the Bay, hosted the seminars.



4

Waste Management and Site Cleanup

Task Force on Building Capacity for Managing Organic Material – Anaerobic Digestion, Composting and Recycling

The “Draft 2010-2020 Massachusetts Solid Waste Master Plan” proposes ambitious goals of reducing the quantity of waste disposed of in the Commonwealth by 30 percent (2 million tons) by 2020, and by 80 percent (5.2 million tons) by 2050. The Master Plan also sets a sub-goal for 2020 of diverting an additional 350,000 tons of organic material from disposal by that year, over the 650,000 tons that were diverted in 2009. Meeting this goal requires significant increases in the Bay State’s capacity for anaerobic digestion, composting, and recycling facilities. This aggressive target is consistent with the recently released Massachusetts Clean Energy and Climate Plan for 2020. Achieving the goals of both of these plans will produce important environmental benefits.

Current solid waste regulations pose barriers to the development of anaerobic digestion (a technology that turns organic waste like food waste into gas for energy production), certain types of recycling, composting, and other clean/green cutting edge technology development in the Commonwealth. In February 2011, EEA established a Task Force on Building Organics Capacity in Massachusetts to:

- Identify the barriers to advancing management of organic material in Massachusetts,
- Identify ways to reduce or eliminate these barriers, and
- Recommend specific actions to expand the infrastructure for composting, recycling, and organics management.

The Task Force concluded that the technologies for composting and recycling organics have improved a great deal over the last 20 years, and that today’s anaerobic digestion, composting, and recycling operations are less like solid waste dumps and more like modern manufacturing plants.

Regulatory changes have been proposed that would bring the regulations up-to-date with the development of these innovative technologies by establishing an appropriate level of MassDEP oversight over these activities, facilitating siting of these projects, and maintaining high environmental standards and local oversight.

For additional information on the Organics Task Force, visit the Massachusetts Department of Environmental Protection at:

www.mass.gov/dep/public/committee/adtf.htm

For additional information on Anaerobic Digestion at Wastewater Treatment plants, view “Tapping the Energy Potential of Municipal Wastewater Treatment: Anaerobic Digestion and Combined Heat & Power in Massachusetts and Beyond”:

www.mass.gov/dep/water/priorities/we_prore.htm

MassDEP Recycling Grants to Communities

In 2011, MassDEP provided recycling grants to four communities switching to “single-stream recycling” programs in order to increase recycling and decrease trash disposal. MassDEP provided \$100,000 each to the city of Springfield and the towns of Brookline and Framingham, and \$86,500 to the town of Franklin. These funds

– part of MassDEP’s successful Sustainable Materials Recovery Program (SMRP) – will help the communities offset the costs to purchase the recycling carts, which are the heart of the single-stream system.

These communities are among the 70 that have gone to the single-stream recycling program. Under this program, residents are encouraged to put all of their recyclables into the one container – providing more capacity than the traditional blue bins. And instead of separating it at home, the “single stream of recyclable materials” is separated at a sorting facility – making it easier for residents to participate. Single-stream recycling with carts results in an average 20 percent increase in recycling tonnage, with some communities achieving more than 50 percent increase.

Single-stream recycling in these communities and in the others across the state has greatly increased recycling tonnage, significantly decreased trash disposal, saved communities hundreds of thousands of dollars a year in disposal fees, helped to reduce our greenhouse gas emissions, and employed more than 14,000 people in the recycling industry. This program is a great success, and MassDEP will provide assistance to other cities and towns that want to make the switch.

Expanding the Bottle Deposit Law

When we throw bottles and cans away, we waste natural resources and energy. The original Bottle Deposit Law, enacted in 1982 and implemented the following year, was aimed at recovering soda, beer and other carbonated-beverage containers for recycling. That law did not cover water, juice or sports drink containers, which represent more than 30 percent of all beverages sold in Massachusetts today.

Water, juice, and sports drink containers are a major source of litter and trash in our communities and cost millions of tax dollars to collect and recycle. The Massachusetts Legislature is considering several proposals that would expand the Bottle Deposit Law to cover these additional

containers. If passed, the expanded Bottle Deposit Law will:

- Save cities and towns millions of dollars in collection and disposal costs annually,
- Create and save hundreds of jobs across Massachusetts, and
- Generate an estimated \$20 million in new revenues.

Currently, more than 30,000 tons of non-carbonated beverage bottles are discarded and not recycled each year – enough bottles to fill Fenway Park, from the press box to the Green Monster, five times. There are four times as many non-carbonated beverage containers in litter than containers with deposits. More than 75 percent of residents and about 200 communities favor updating the deposit law to include water, tea and sport drink containers.

Expanding the existing nickel deposit on carbonated drinks to also cover water and sports drinks is a very high priority for MassDEP. An expanded Bottle Bill will increase recycling rates, reduce the bottle and can litter that we see on our streets, parks and beaches, and save communities up to \$7 million a year in trash costs.

Governor Patrick has in the past included legislation in his proposed budget to expand the Bottle Deposit Law. That legislation would add a deposit for containers that are not currently covered by the existing law, such as bottled water and juice drinks. MassDEP has been tasked with leading the charge to obtain passage of this legislation, which reduces litter, saves money for our cities and towns, and promotes recycling. Passage of this law is a top priority for MassDEP. The Legislature declined to include the Governor’s proposal in the Fiscal Year 2012 budget. The Governor’s budget proposal to the Legislature for Fiscal Year 2013 again included an expanded Bottle Deposit Program.

Additional information on expanding the bottle deposit law is available at:

www.mass.gov/dep/recycle/reduce/bottleca.htm



Time-Critical Removal of Contamination

In 2011, MassDEP conducted assessments at sites where elevated concentrations of hazardous materials had been detected and no viable responsible parties have been identified. This testing was conducted to determine whether the locations met the criteria for EPA's publicly-funded Contamination Removal Program.

Based on assessments conducted by MassDEP, EPA's Removal Program conducted time-critical removal actions and restoration at a number of locations, including a residential neighborhood in Milton with lead and arsenic contamination in surface soils; a municipal park in Salem where surface soils were contaminated from the former use of the site for a manufactured gas plant; and a residential neighborhood in Lawrence where surface soils were contaminated with PCBs and lead from the adjacent former scrap yard. MassDEP also worked with EPA's Removal Program on sampling of soils at a residential condominium development in Danvers with elevated levels of metals and dioxins, and at a residential neighborhood in Hyde Park/Boston with elevated levels of PCBs. In addition, MassDEP coordinated with EPA's Removal Program on the assessment and cleanup of residential properties contaminated with PCBs, lead and PAHs in New Bedford, as well as chromium-contaminated soils at the Walton Lonsbury site in North Attleboro.

At each of these locations, MassDEP coordinated with EPA staff and assisted in communication with residents and local officials, as needed.

Commonwealth Brownfields Support Teams

The Massachusetts Brownfields Support Team (BST) Initiative brings together staff from key state and federal agencies to help municipalities solve problems that impede the redevelopment of contaminated properties. These teams are made up of staff from MassDEP, MassDevelopment, the MassDOT, and the Executive Office of Housing

and Economic Development. The U.S. EPA's New England office is also an integral part of the Brownfields Support Team, as is the Attorney General's Office. In 2011, six sites statewide received BST support. Highlights from these projects include:

- Uniroyal/Facemate, Chicopee – Assistance with technical, legal and funding issues related to the municipally-owned former Uniroyal and Facemate properties helped the City to "reposition" the properties for a mixed-use redevelopment along the Chicopee River to be known as "RiverMills at Chicopee Falls." As a result of the team efforts, the city is able to market this municipally-owned site for commercial reuse creating jobs and tax revenue. Chicopee has prioritized the revitalization of this area and its redevelopment will include a river walk/bikeway that will connect the site to the downtown commercial district. The city has committed to locating its new +/- 21,000-square foot Older Adult Community Center on a portion of the Facemate site.
- Fisherville Mill, Grafton – MassDEP worked to acquire all necessary federal, state, and local permits for the design of a containment structure to collect oozing oil and to dredge oil-laden sediments in the canal at this abandoned blighted mill. The property is located on the Blackstone River and the Town of Grafton is constructing a public park with river access on a portion of the property. MassDEP work is funded with ARRA LUST (Leaking Underground Storage Tank) and EPA Brownfields Coalition Funds.

More information on the MassDEP Brownfields Program may be found at:

www.mass.gov/dep/cleanup/brownfie.htm

Natural Resource Damages Program

On behalf of the EEA Secretary, MassDEP implements a program to assess natural resource damages (NRD) resulting from releases of oil or hazardous materials and to require restoration of these injured resources to functional ecological systems. The overall goal of a NRD action is to restore injured resources. The NRD action may also include compensation to the public for the lost use (including human use) of the injured resource from onset of injury to completion of restoration.

MassDEP achieved significant ecosystem improvement milestones this year under the Natural Resource Damages program, including:

- GE/Housatonic River NRD Restoration – The Housatonic River Floodplain Forest Restoration Project is restoring and enhancing the integrity of important floodplain forests. In partnership with the Berkshire Natural Resources Council and MassWildlife, the project contributed funds toward the acquisition of the 273-acre Flat Brook Wildlife Management Area in West Stockbridge in the headwaters of the Williams River, a tributary of the Housatonic River. In addition, a multi-year effort to restore degraded wildlife habitat in floodplain forest, re-establish native plants along the Housatonic River, and promote increased educational opportunities associated with the river, continued in FY11 with the planting of native floodplain species and control of invasive plant species on the Sedgwick Reserve and Taft Farm; monitoring reports document a 75 percent reduction in invasive plants. Education and outreach efforts have reached students of all ages as well as underserved populations (e.g. developmentally-disabled adults, high-school students with learning disabilities, and urban youth with little prior experience in nature).
- Textron/MMR NRD Restoration – MassDEP serves as the Lead Administrative Trustee for the Textron/MMR NRD settlement and oversees implementation of groundwater-

restoration projects. In FY11, the Town of Sandwich focused on completing the Phase I needs assessment of a Comprehensive Water Resources Management Plan that will be an essential component in on-going regional water resources planning to address nitrogen loading, groundwater and surface water protection, and inform options for regional wastewater treatment. Also, the Upper Cape Water Supply Regional Cooperative has been working to identify existing and proposed municipal and residential water withdrawals, sensitive environmental receptors, and wastewater discharges as part of an overall project to achieve sustainable regional management of the Sagamore Lens. This project is intended to consider competing demands for environmental resources, groundwater clean-up operations and waste disposal; the Cooperative has also been collaborating with the USGS groundwater modeling effort underway as part of the ongoing U.S. Department of Defense cleanup programs at the Massachusetts Military Reservation.

MassDEP's website has additional information on the Natural Resource Damages Program at: www.mass.gov/dep/cleanup/sites/nrd/nrd.htm

Emergency Preparedness - Field Assessment and Support Team (FAST)

MassDEP has assembled a team of staff chemists, biologists, engineers, and environmental scientists to provide technical support at chemical and oil spill incidents as needed on a 24 hours per day, 7 days per week basis. A number of equipment assets have also been procured to facilitate and support these deployments, including a 27-foot-long mobile laboratory vehicle.

The FAST program has been developed to enable the agency to better fulfill its statutory mandate to ensure the protection of public health and the environment. Working with other response agencies and partners, FAST personnel help assess air, water and soil for petroleum and chemical

ACCOMPLISHMENT HIGHLIGHTS

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contaminants, and provide information, data, and recommendations to emergency responders and/or Incident Command.

FAST emergency response incidents in 2011 included:

- BOSTON (BRIGHTON) – March 1, 2011 – FAST personnel responded to an apartment complex where a resident had committed suicide using potassium cyanide. As the only responding party with a Hydrogen Cyanide testing meter, FAST air monitoring data was a key component in determining that conditions in neighboring units were safe.
- MIDDLETON – March 13, 2011 – FAST joined with EPA personnel to respond to an explosion at the Bostik chemical facility. Using gas chromatographs in the FAST mobile laboratory, staff were able to demonstrate that air quality was safe in a nearby residential neighborhood, and that only trace amounts of Volatile Organic Compounds were present in the adjacent Ipswich River, which is a drinking water supply for a downstream community.
- MALDEN – March 16, 2011 – FAST responded to a spill of mercury from a thermostat that was brought into the Malden High School by a student, to investigate areas of contamination pre- and post-cleanup using a highly sensitive Lumex mercury analyzer.
- REHOBOTH – May 4, 2011 – FAST and EPA staff responded to a fire at the G&W Foundry that was caused by an out-of-control chemical reaction. Using gas chromatographs in the FAST mobile laboratory, MassDEP staff were able to demonstrate that air quality at the facility, located upwind of two schools, was safe, but that fire-fighting runoff contained levels of 1,2,4 Trichlorobenzene that warranted follow-up.
- SPRINGFIELD – June 7, 2011 – The FAST mobile laboratory was dispatched to monitor air for asbestos near buildings being demolished following a tornado. On-board microscopes were used to determine fiber levels in the air, which resulted in several directives to increase fiber suppression (watering) operations.

Background information on MassDEP's FAST can be found at:

www.mass.gov/dep/about/organization/fast.htm



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Compliance and Enforcement

MassDEP's Compliance Assurance Strategy

MassDEP employs a "Compliance Assurance Strategy" that promotes environmental compliance through compliance assessment activities, enforcement, technical assistance, and public education. We need to ensure that as we strive to achieve our ultimate goal – maintaining a clean and healthy environment – we strategically utilize and integrate all these compliance assurance tools, utilizing the best mix of these tools that will achieve strategic goals, including:

- **Compliance Assessment and Verification:** Efforts designed to assess how a sector or group of sources is performing, or the effectiveness of a particular compliance assurance strategy. As MassDEP increasingly relies on compliance information provided by the regulated entities to determine compliance status, an important element of these efforts is to ensure the validity of this information and actual compliance.
- **Protecting Healthy Communities through Environmental Compliance:** MassDEP regularly develops compliance assurance and enforcement initiatives to address matters that have direct impacts on public health or the environment.
- **Targeted Enforcement to Achieve Results:** Compliance assurance efforts that are targeted to address a sector or regulated entities for which we know or suspect there are noncompliance issues, including coordinated enforcement action targeting a specific sector with a known history of poor compliance.

- **Leveraging Partnerships to Achieve Environmental Goals:** Collaborating with other agencies, both state and federal, as well as with municipalities, leverage resources and expertise. During difficult economic times, when state and local governments face significant budgetary and resource constraints, such partnerships are even more critical.

Agency-wide Planning Approach to Compliance Assurance

In FY11, MassDEP implemented a robust agency-wide planning process to ensure we are proactive and strategically planning our compliance resources to achieve our goals. Through this process, MassDEP looked at all planned compliance assessment activities, as well as the goal or aim of each activity. Compliance activities are used for:

- Regular, routine inspections of our largest facilities, to ensure they remain in compliance, and to meet our federal commitments;
- Inspections to follow up on significant compliance concerns we become aware of at other facilities;
- Enforcement blitzes, designed to identify violators and improve performance of a sector with a known or suspected compliance problem;
- Assessment of the environmental performance of a group or source to determine if there are compliance problems endemic to that group, which may need to be addressed systematically.



Compliance and Enforcement Activities

A crucial element of any effective compliance assurance strategy is a robust compliance and enforcement program that maintains a highly-visible presence in the regulated community, includes the issuance of timely and appropriate penalties, and takes other enforcement actions against environmental scofflaws. The goal is to deter current and would-be rule-breakers by finding violators, and to make those violators return to compliance, restore any damage caused, and pay a penalty that exceeds the economic benefit of non-compliance. In addition, MassDEP's enforcement efforts continued to yield important environmental benefits, such as reduced ozone pollution, fewer asbestos particles released to the air, proper cleanup of contaminated soils, and protected water for Massachusetts citizens.

Despite diminishing resources, in 2011 MassDEP continued to strive to maintain a robust compliance and enforcement presence, as summarized below:

- **Inspections:** It is critical to MassDEP's compliance and enforcement success that the agency maintains a vigorous and visible "cop on the beat" presence, which can best be measured by the number of facilities its inspectors visit. The traditional inspection – a physical visit to review the compliance status of a regulated facility or site – remains the mainstay of MassDEP's compliance assessment program. Inspections are conducted for a variety of reasons: routine compliance assurance targeting of business sectors, follow-up at previously inspected facilities where violations were found, or investigation of complaints from the public. In FY11, MassDEP performed 6,643 inspections. In spite of budget and staff cuts, we continued to focus efforts on maintaining a credible compliance and enforcement presence.
- **Enforcement Actions:** While inspections can be used to further any number of strategic compliance and enforcement goals, a primary reason for performing them is to discover violations. MassDEP is committed to undertaking timely and appropriate enforcement actions when facilities are found to be out of compliance. In FY11, MassDEP issued more than 2,750 enforcement actions, including:
 - **Lower Level Enforcement (LLE),** including a variety of notices of non-compliance (NONs). These are generally used to require correction of minor compliance problems, provide notice that existing practices are unacceptable, or warn of administrative orders and/or penalties if problems are not corrected. In FY11, MassDEP issued over 2,100 lower level enforcement actions.
 - **Higher Level Enforcement (HLE),** encompassing the range of enforcement actions generally pursued for more serious violations. These include administrative consent orders (ACOs) with or without penalties, penalty assessments (PAN), permit and license suspensions or revocations, and referrals to the Attorney General (AGO) or U.S. Environmental Protection Agency (EPA). In FY11, MassDEP undertook 681 HLE actions.
 - **Penalties:** An important element of a credible enforcement program, appropriate penalties and fines send a strong message to regulated facilities that breaking environmental rules won't gain them any financial advantages and, in fact, will cost them more in the long run. Over the course of FY11, MassDEP independently assessed approximately \$3.4 million in administrative penalties and secured an additional \$7 million in fines and restitution through actions pursued jointly with the Massachusetts Attorney General.

- **Largest-ever Environmental Violations**

Penalty: In 2011, MassDEP joined the Attorney General's office in a major enforcement action against Wheelabrator trash-to-energy facilities in Saugus, North Andover and Millbury for violations involving ash disposal and the release of wastewater into wetlands. The \$7.5 million penalty against Wheelabrator is the largest monetary penalty ever imposed on a violator for claims arising from environmental violations. The case alleged that the Saugus and North Andover facilities committed multiple violations by failing to properly treat and dispose of ash and failed to contain fugitive ash. The Millbury and Saugus plants also committed violations by releasing ash-contaminated water and ash sludge into nearby wetlands and waterways. As part of the settlement, Wheelabrator must pay a total of \$7.5 million; \$4.5 million will be paid to communities that dispose of their trash at the Saugus and North Andover facilities, while \$2 million in fines will be paid to the Commonwealth, \$500,000 will be donated to the Massachusetts Natural Resource Damages Trust, and another \$500,000 will be used for supplemental environmental projects. Wheelabrator must also hire an independent

environmental auditor to monitor the company's compliance for the next three years.

- **Walpole Superfund Site:** MassDEP joined the Attorney General's Office, the federal Department of Justice and the U.S. Fish and Wildlife Service in a settlement with the owners of the Blackburn and Union Privileges Superfund site in Walpole. More than \$1 million has been secured to restore and protect natural resources at the site. Decades of heavy industrial use caused asbestos, arsenic, lead and other toxic substances to contaminate soil and water there, affecting the nearby Neponset River, associated wetlands and groundwater under the site. The settlement funds secured under the Natural Resource Damages statute will be used to fund local projects that will help to restore the groundwater, wetlands and other resources.

For information on MassDEP's compliance assistance activities:

www.mass.gov/dep/service/compliance.htm

For information on MassDEP's enforcement activities:

www.mass.gov/dep/service/enforcement.htm



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Learn more about MassDEP:

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